

Notice of Allowability

Application No.

10/667,612

Examiner

Justin T. Darrow

Applicant(s)

ENGLAND ET AL.

Art Unit

2132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to an information disclosure statement filed 06/03/2004.
2. ☒ The allowed claim(s) is/are 1-60.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

1. Claims 1-60 have been examined.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

In the Specification:

Amendments in the Specification, Paper SPEC(09/22/2003), page 2, line 4, after "April 4, 1999," insert --now U.S. Patent No. 6,651,171,--.

Amendments in the Specification, Paper SPEC(09/22/2003), page 2, line 17, after "January 8, 1999," insert --now U.S. Patent No. 6,820,063,--.

Priority

3. Acknowledgment is made that the instant application is a continuation of Application No. 09/287,393, filed 04/06/1999, now U.S. Patent No. 6,651,171 B1.

Information Disclosure Statement

4. The information disclosure statements (IDSes) filed on 06/03/2004 and 09/22/2003 were filed before the mailing date of the first Office action on the merits. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Allowable Subject Matter

5. Claims 1-60 are allowed.

6. The following is an examiner's statement of reasons for allowance:

Claims 1-6 are drawn to a method of executing program code in a secure manner in a data processor. The closest prior art, Holtey, U.S. Patent No. 5,491,827 A, discloses a similar method. Holtey describes a method comprising:

fetching an instruction for execution from a memory (see column 10, lines 26-31; figure 4, items 5,10, and 103a-n; figure 3, item B3; an access control processor (ACP) sets up the RAM of an access discrimination logic unit to allow a mainframe to read within flash memories);

determining that the instruction has access privileges for accessing a specified location (see column 10, lines 8-15; the access control processor (ACP) verifying that the mainframe has correct permissions to access the flash memories); and

accessing the specified location only when the instruction has privileges for accessing the specified location (see column 10, lines 11-15: RAM Coding Table, items W14 and W15; only when the appropriate permissions have been presented does the access control processor (ACP) modify the content of the RAM array to provide appropriate access to the flash memories).

However, Holtey neither teaches nor suggests determining that the instruction has access privileges for accessing a specified location within the memory from which the instruction was fetched. This particular feature of independent claim 1 renders claims 1-6 allowable.

Claims 7-11 and 12 are drawn to methods of executing program code in a secure manner in a data processor, respectively. The closest prior art, Holtey, U.S. Patent No. 5,491,827 A, discloses similar methods. Holtey describes a method comprising:

fetching an instruction for execution (see column 10, lines 26-31; figure 4, items 5,10, and 103a-n; figure 3, item B3; an access control processor (ACP) sets up the RAM of an access discrimination logic unit to allow a mainframe to read within flash memories);

determining that the instruction has access privileges for accessing a specified location (see column 10, lines 8-15; the access control processor (ACP) verifying that the mainframe has correct permissions to access the flash memories); and

accessing the specified location only when the instruction has privileges for accessing the specified location (see column 10, lines 11-15: RAM Coding Table, items W14 and W15; only when the appropriate permissions have been presented does the access control processor (ACP) modify the content of the RAM array to provide appropriate access to the flash memories).

However, Holtey neither teaches nor suggests determining that the instruction has access privileges for accessing a specified by converting the specified location into a physical address via a memory control unit. This particular feature explicitly incorporated into independent claims 7 and 12 renders claims 7-11 and 12, respectively, allowable.

Claims 13-16, 17-22, 23-26, 27, and 28-36 are drawn to methods of executing program code in a secure manner in a data processor. The closest prior art, Holtey, U.S. Patent No.

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5,491,827 A, discloses similar methods. However Holtey neither shows nor implies determining virtual addresses that the code accesses nor converting, by a control logic unit, the specific addresses to corresponding physical addresses. These steps expressly recited in independent claims 13, 17, 23, 27, and 28 render claims 13-16, 17-22, 23-26, 27, and 28-36, respectively, allowable.

Claims 37 and 38, 39, 40, 41-46, 47, 48-50, and 51-53 are drawn to data processors for executing secure code residing in a memory. The closest prior art, Holtey, U.S. Patent No. 5,491,827 A, discloses similar data processors. Holtey describes a method comprising:

an instruction decoder determining that the instruction has an associated privilege level appropriate to a secure portion of a memory (see column 10, lines 8-15; the access control processor (ACP) verifying that the mainframe has correct permissions to access the flash memories); and

control logic coupled to the instruction decoder for executing the current instruction only when the associated privilege level corresponds to one or more predetermined regions of the memory (see column 10, lines 11-15: RAM Coding Table, items W14 and W15; only when the appropriate permissions have been presented does the access control processor (ACP) modify the content of the RAM array to provide appropriate access to the flash memories).

However, Holtey neither depicts nor motivates an instruction pointer for holding an address of a current instruction in the memory. This particular feature explicitly recited in independent claims 37, 39, 40, 41, 47, 48, and 51 renders claims 37 and 38, 39, 40, 41-46, 47, 48-50, and 51-53, respectively, allowable.

Claims 54-60 are drawn to a medium configured to cause a processor to execute curtailed code. The closest prior art, Takahashi et al., U.S. Patent No. 5,335,334 A, discloses a similar medium. Although Takahashi et al. describes accessing a portion of a region indicated by an address given in the code (see column 9, lines 11-17 and figure 11, items R1 and X2) if the code is in a particular region (see column 10, lines 53-62 and figure 1, items 120 and 131), this reference does not specify determining that the curtailed code corresponds to a privilege level associated with physical addresses corresponding to virtual addresses accessed by the curtailed. This particular feature explicitly recited in independent claim 54 renders claims 54-60 allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Ryba et al., U.S. Patent No. 5,574,936 A discloses an access control mechanism controlling access to and logical purging of an access register translation lookaside buffer.

Telephone Inquiry Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin T. Darrow whose telephone number is (571) 272-3801, and whose electronic mail address is justin.darrow@uspto.gov. The examiner can normally be reached Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barrón, Jr., can be reached at (571) 272-3799.

The fax number for Formal or Official faxes to Technology Center 2100 is 571-273-8300. In order for a formal paper transmitted by fax to be entered into the application file, the paper and/or fax cover sheet must be signed by a representative for the applicant. Faxed formal papers for application file entry, such as amendments adding claims, extensions of time, and statutory disclaimers for which fees must be charged before entry, must be transmitted with an authorization to charge a deposit account to cover such fees. It is also recommended that the cover sheet for the fax of a formal paper have printed **“OFFICIAL FAX”**. Formal papers transmitted by fax usually require three business days for entry into the application file and consideration by the examiner. Formal or Official faxes including amendments after final rejection (37 CFR 1.116) should be submitted to 571-273-8300 for expedited entry into the application file. It is further recommended that the cover sheet for the fax containing an amendment after final rejection have printed not only **“OFFICIAL FAX”** but also **“AMENDMENT AFTER FINAL”**.

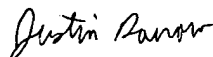
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

December 11, 2005


JUSTIN T. DARROW
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100